

# Waller Creek Tunnel Project

Austin, Texas

Brown & Gay Engineers, Inc.  
**TACWA Presentation**  
May 29, 2009





# **Owner**

City of Austin

# **Sponsoring Department**

Watershed Protection & Development  
Review

# **Managing Department**

Public Works



# Design Team

## ■ Joint Venture (prime)

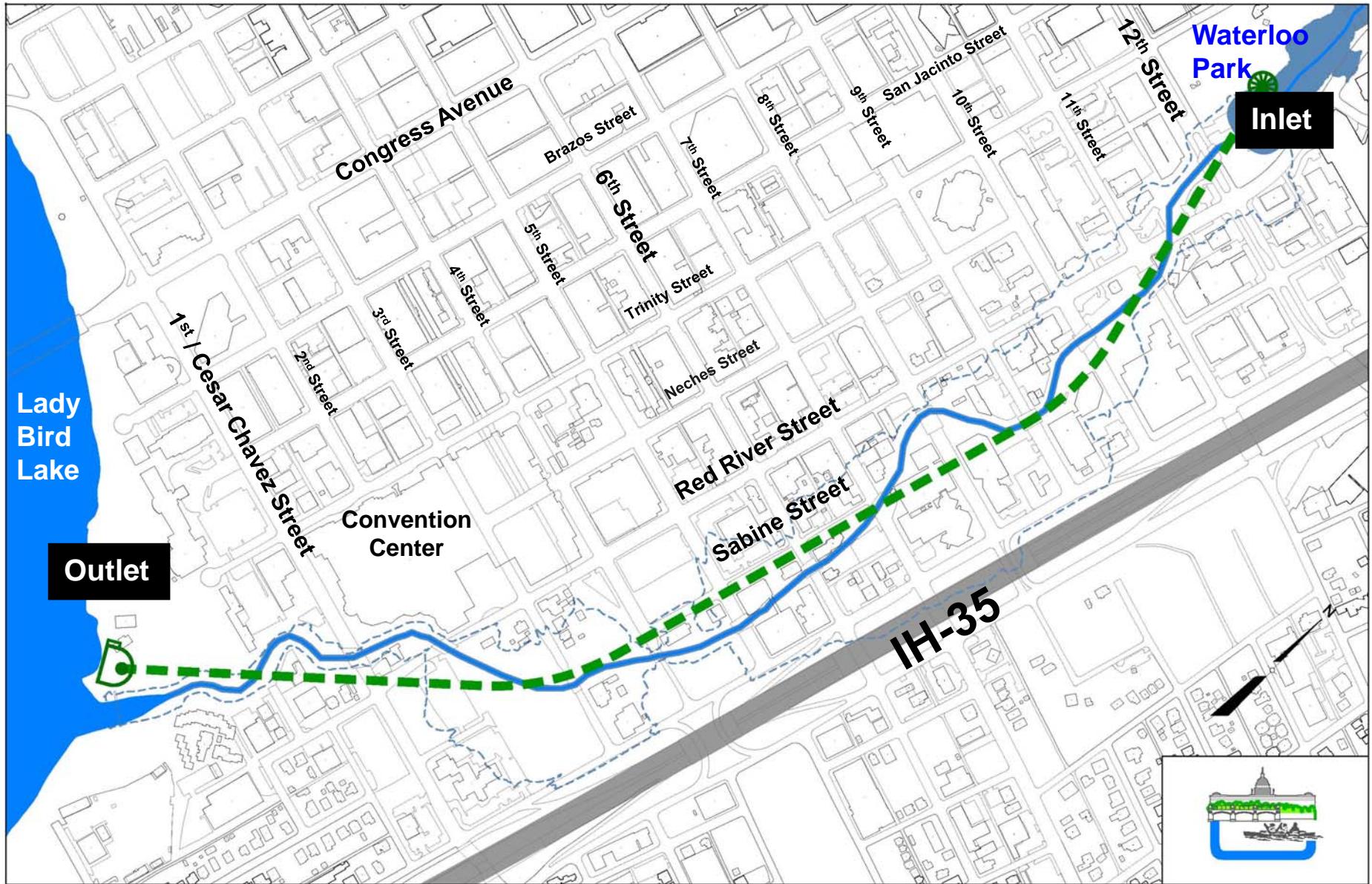
- Kellogg Brown & Root Services, Inc.
- Espey Consultants, Inc.



## ■ Subconsultants:

- |  |   |
|--|---|
| ■ Accurate CAD & Technical Services, Inc.                    | ■ Group Solutions RJW                   |
| ■ All Points Inspection Services, Inc.                       | ■ Harutunian Engineering, Inc.          |
| ■ Baer Engineering & Environmental Consulting Services, Inc. | ■ Holt Engineering, Inc.                |
| ■ <b>Brown &amp; Gay Engineers, Inc.</b>                     | ■ HVJ Associates, Inc.                  |
| ■ CAS Consulting & Services, Inc.                            | ■ Jaster-Quintanilla & Associates, Inc. |
| ■ Crespo Consulting Services, Inc.                           | ■ Jenny Engineering Corporation         |
| ■ Encotech Engineering Consultants, Inc.                     | ■ MWM Design Group, Inc.                |
| ■ Graeber, Simmons & Cowan, Inc.                             | ■ McGray & McGray Land Surveyors, Inc.  |
|  | ■ Texas Star Document Services, Inc.    |





# Cook and Avell





# Benefits

- Reduction of the 100-year floodplain
  - Reclaim over 1,000,000 square feet of land
  - Protect 42 commercial and residential structures
  - Eliminate flooding of 12 roadways
- Reduced risk of severe flooding and erosion
- Debris and pollutants will be substantially reduced
- Improve overall water quality and conditions for plants and wildlife
- Allows great opportunities for redevelopment and amenities along the creek, such as hike and bike trails.

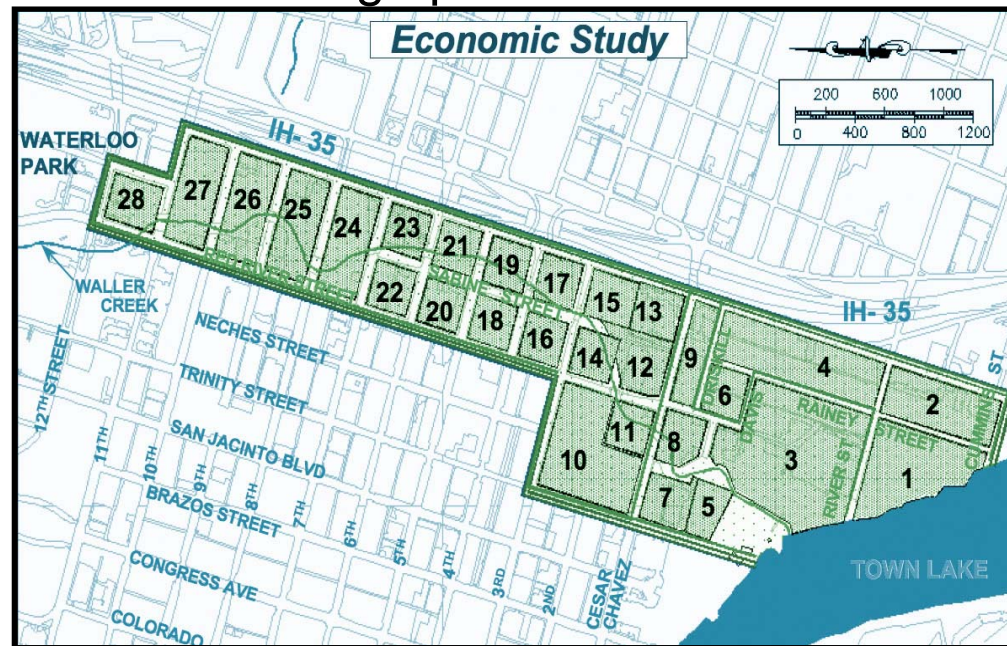




# Funding Source:

# Tax Increment Financing

- City Council approved the Waller Creek TIF on June 21, 2007
- TIF will be in place for 20 years
- City will contribute 100% of the tax increment and the County will contribute 50%
- The City will issue debt to finance the design and construction of the tunnel to be reimbursed through proceeds of the TIF



# Floods

## ■ THEORETICAL STORM (100-year)

- 1% chance of occurrence in any given year
- 10.2 inches in 24 hours (Travis Co., Texas)



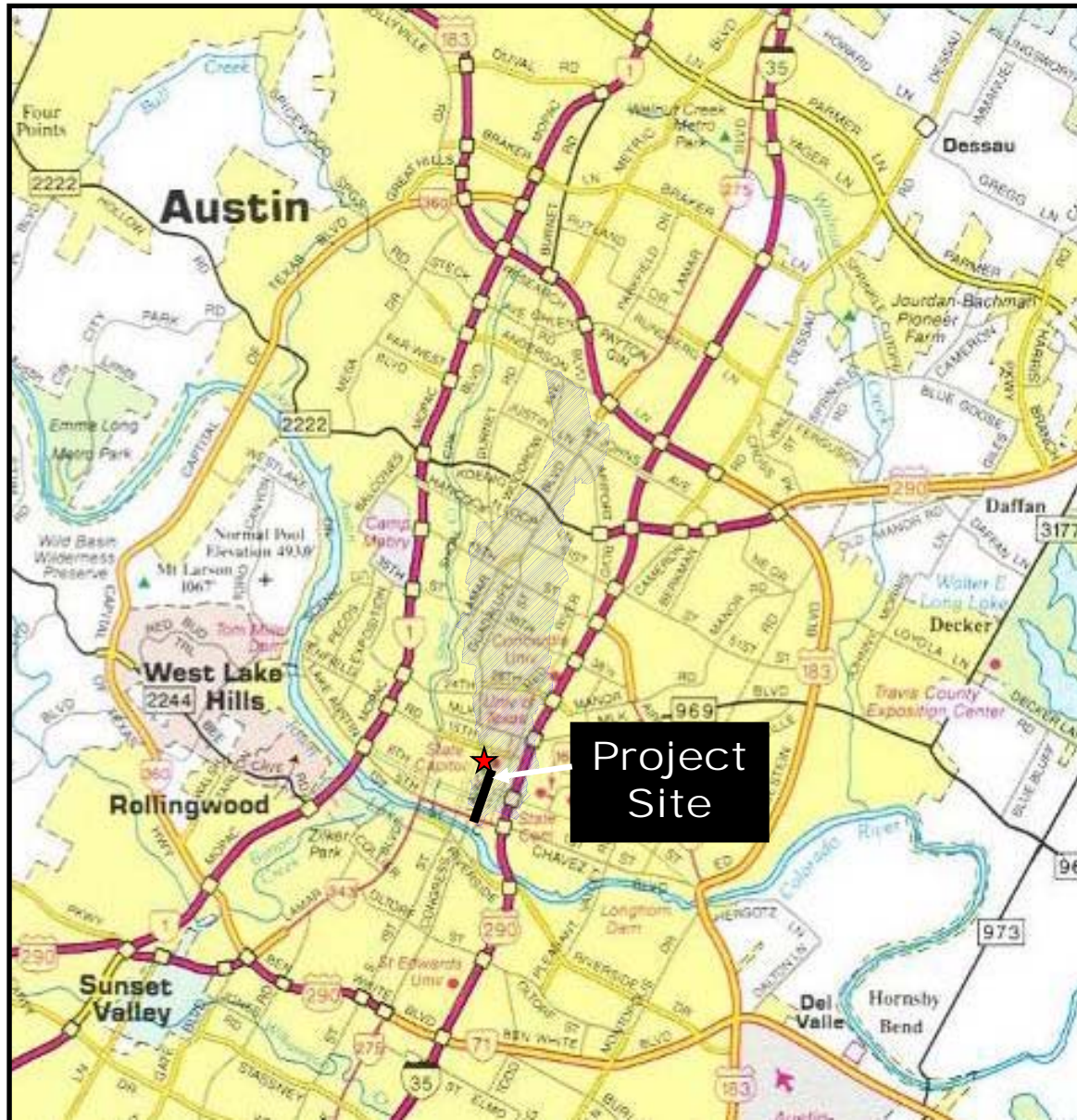
## ■ HISTORICAL FLOODS

- **1915**  
10 inches in 24 hours
- **1921**  
13.75 inches in 12 hours
- **1981** Memorial Day  
10 inches in 4 hours (Shoal Creek)





# Waller Creek Watershed



# Computed Peak Flow Rates

(Fully Developed 100 Year)

■ 38 <sup>th</sup> Street	4,110 cfs	
■ 23 <sup>rd</sup> Street	7,910 cfs	
■ 15 <sup>th</sup> Street	8,120 cfs	
■ 12 <sup>th</sup> Street	8,250 cfs	<i>(inlet at Waterloo)</i>
■ 10 <sup>th</sup> Street	8,270 cfs	
■ 8 <sup>th</sup> Street	8,400 cfs	
■ 4 <sup>th</sup> Street	8,440 cfs	
■ 1 <sup>st</sup> Street	8,540 cfs	
■ Lady Bird Lake	8,560 cfs	



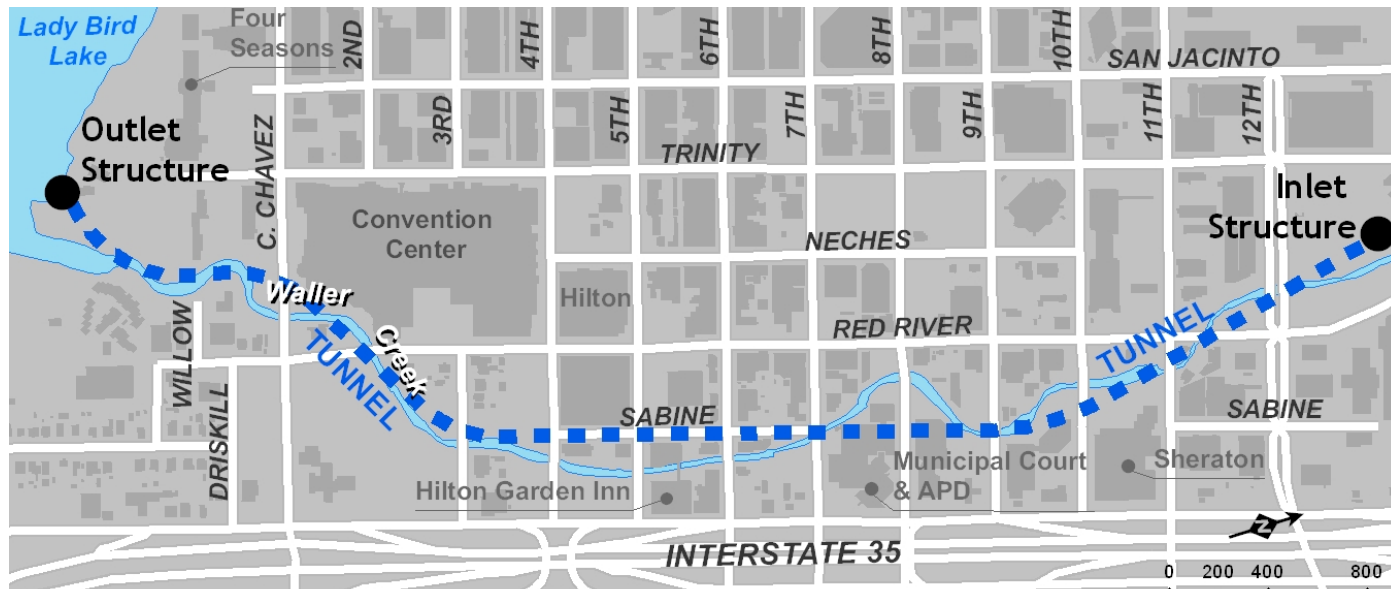
# Tunnel Structure

## ■ Dimensions

- Approximately 5,600 feet in length
- Diameter varies (26/22/20 feet)
- 60-70 feet underground

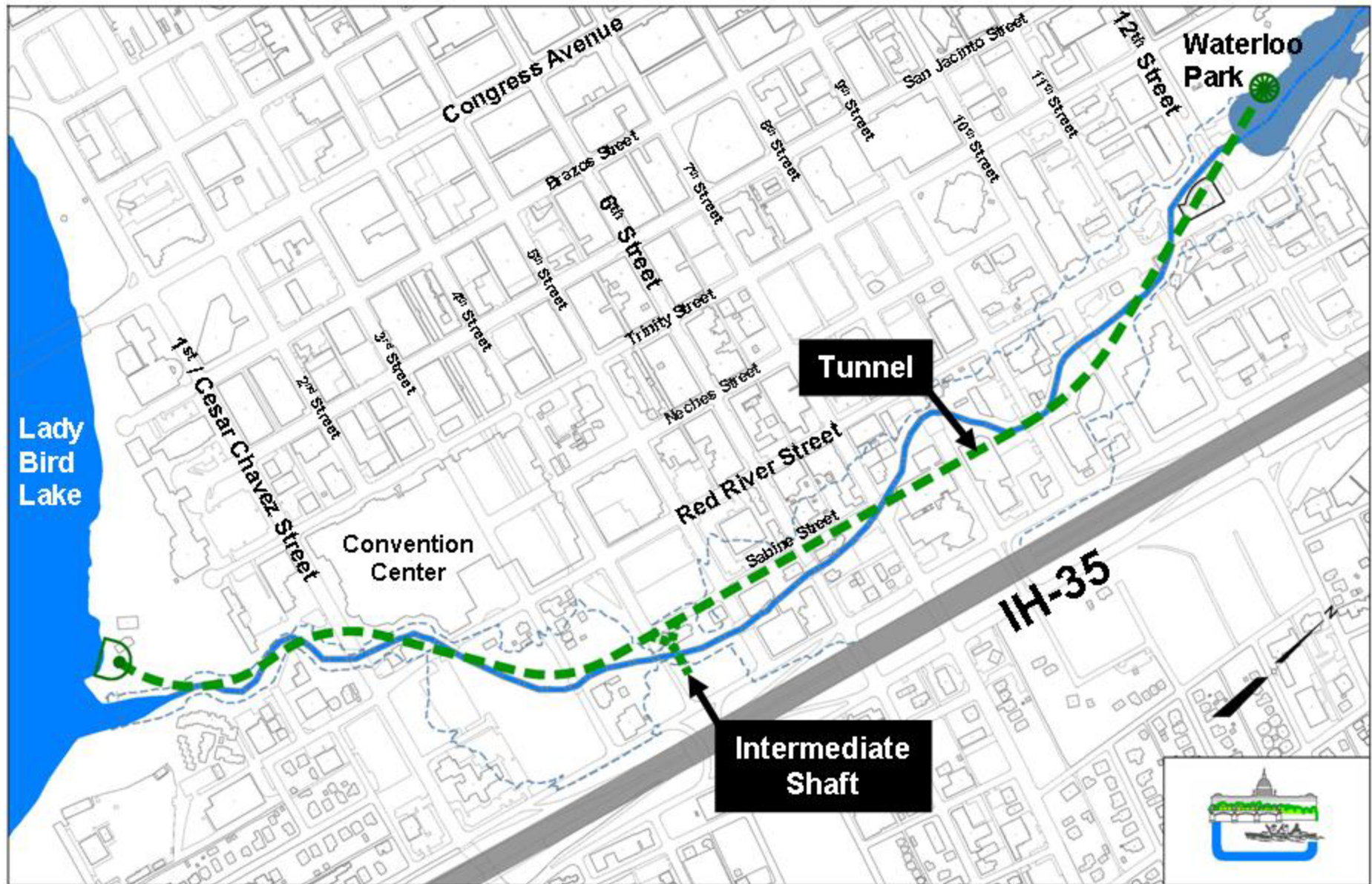
## ■ Surface features

- Inlet at Waterloo Park
- Outlet at Lady Bird Lake
- Creek Side Tunnel Inlets
- Creek recirculation





# Tunnel: Plan View



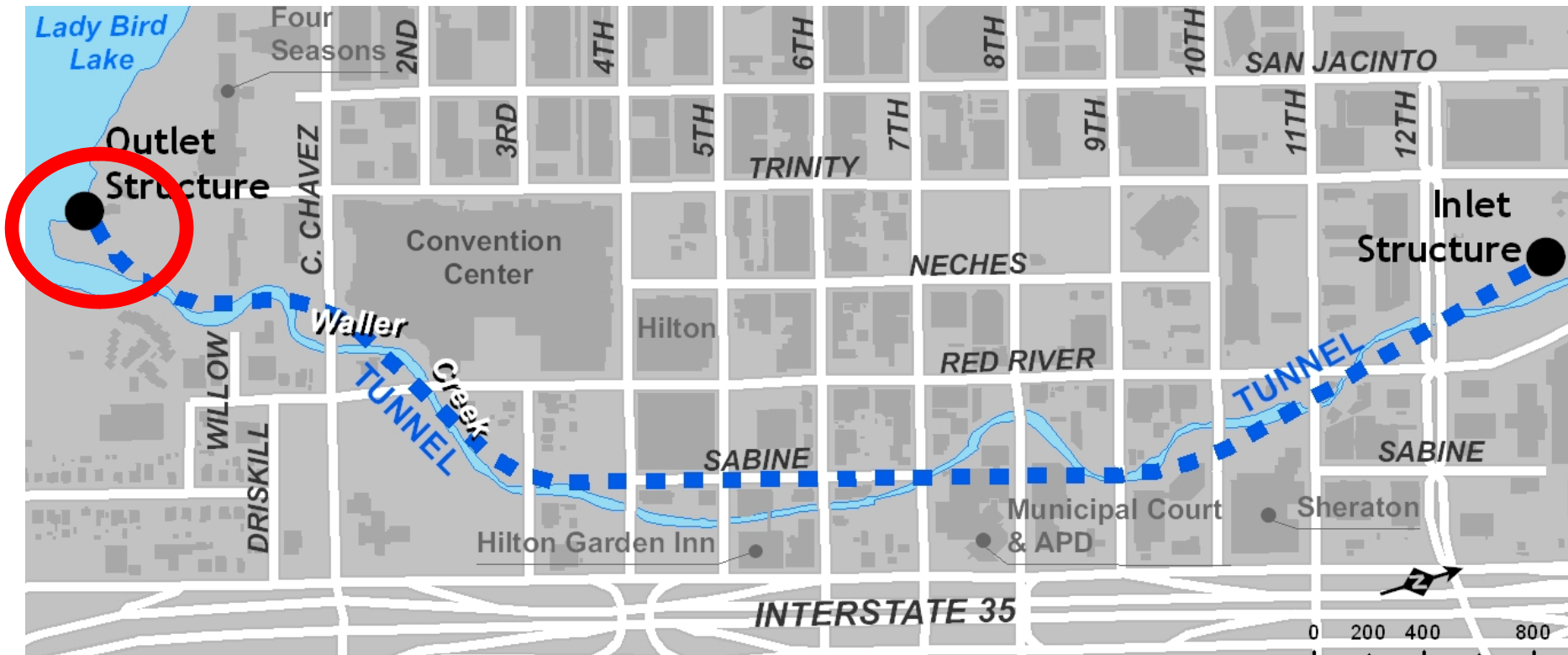
(NOT TO SCALE)



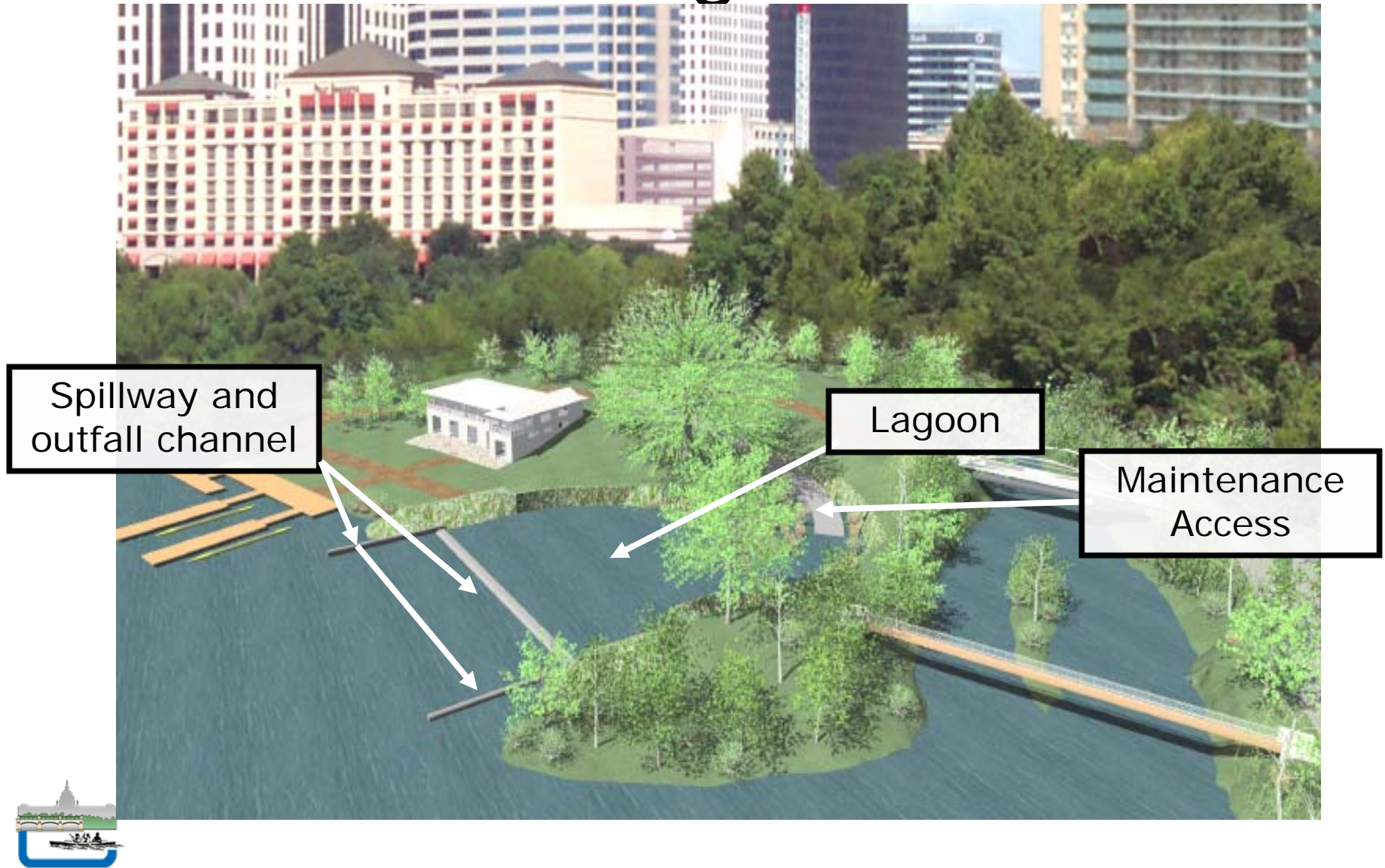
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# Outlet (Lady Bird Lake)



# Outlet Rendering



# Creek Side Tunnel Inlets



# Creek Inlet Design Requirements

## ■ Engineering

- ☐ Capture additional street and storm drain run-off
- ☐ Creek bank stabilization / restoration

## ■ Environment

- ☐ Minimize impacts to natural habitat and vegetation
- ☐ Improve water quality
- ☐ Stabilize the channel

## ■ Compatibility with future master plan needs



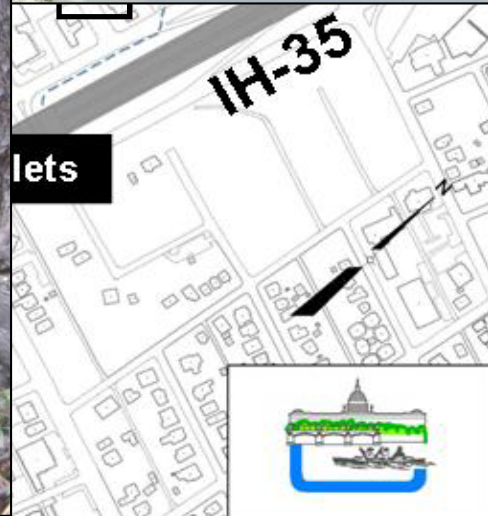


# Existing S

8th to 9th Street

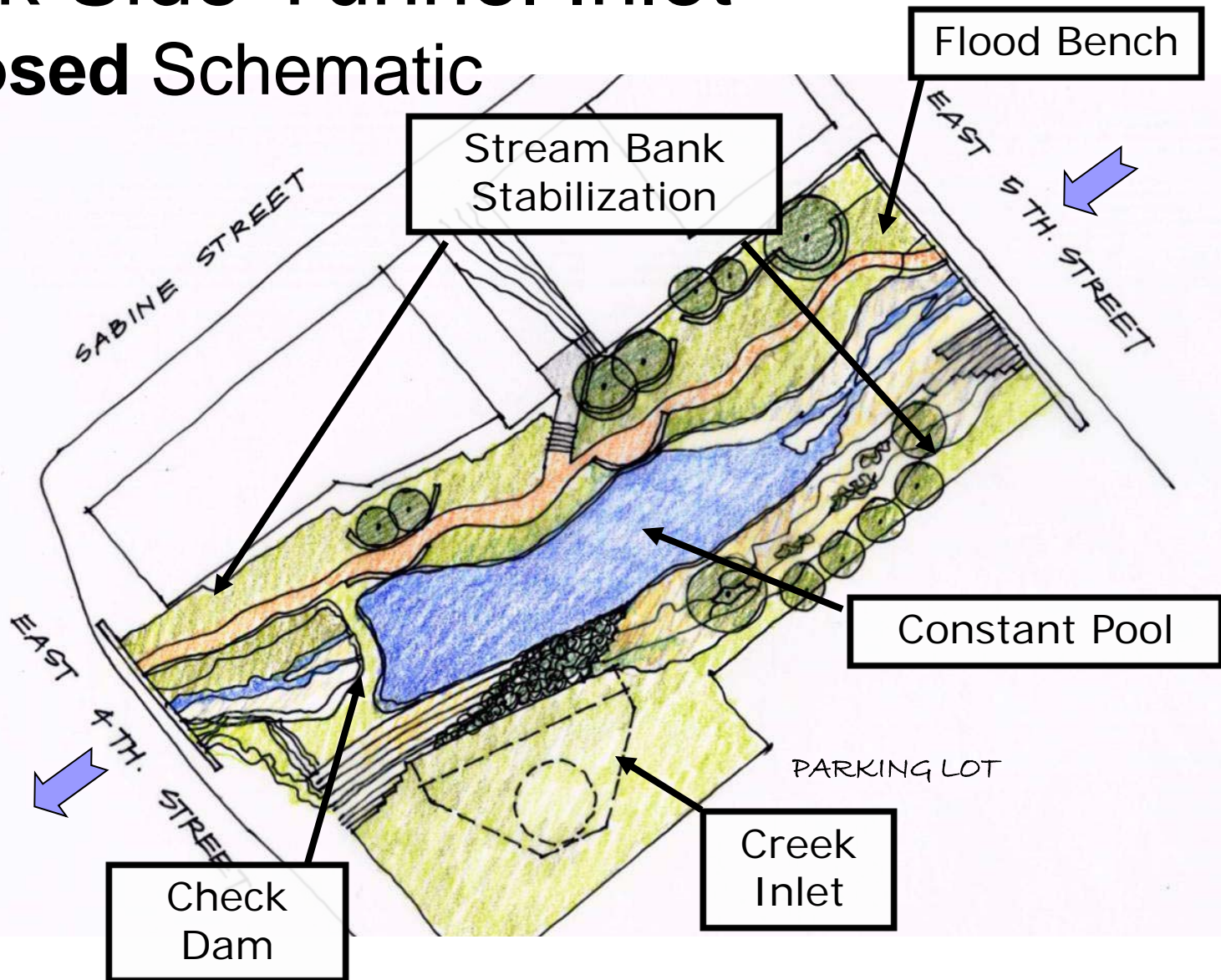


4th to 5th Street



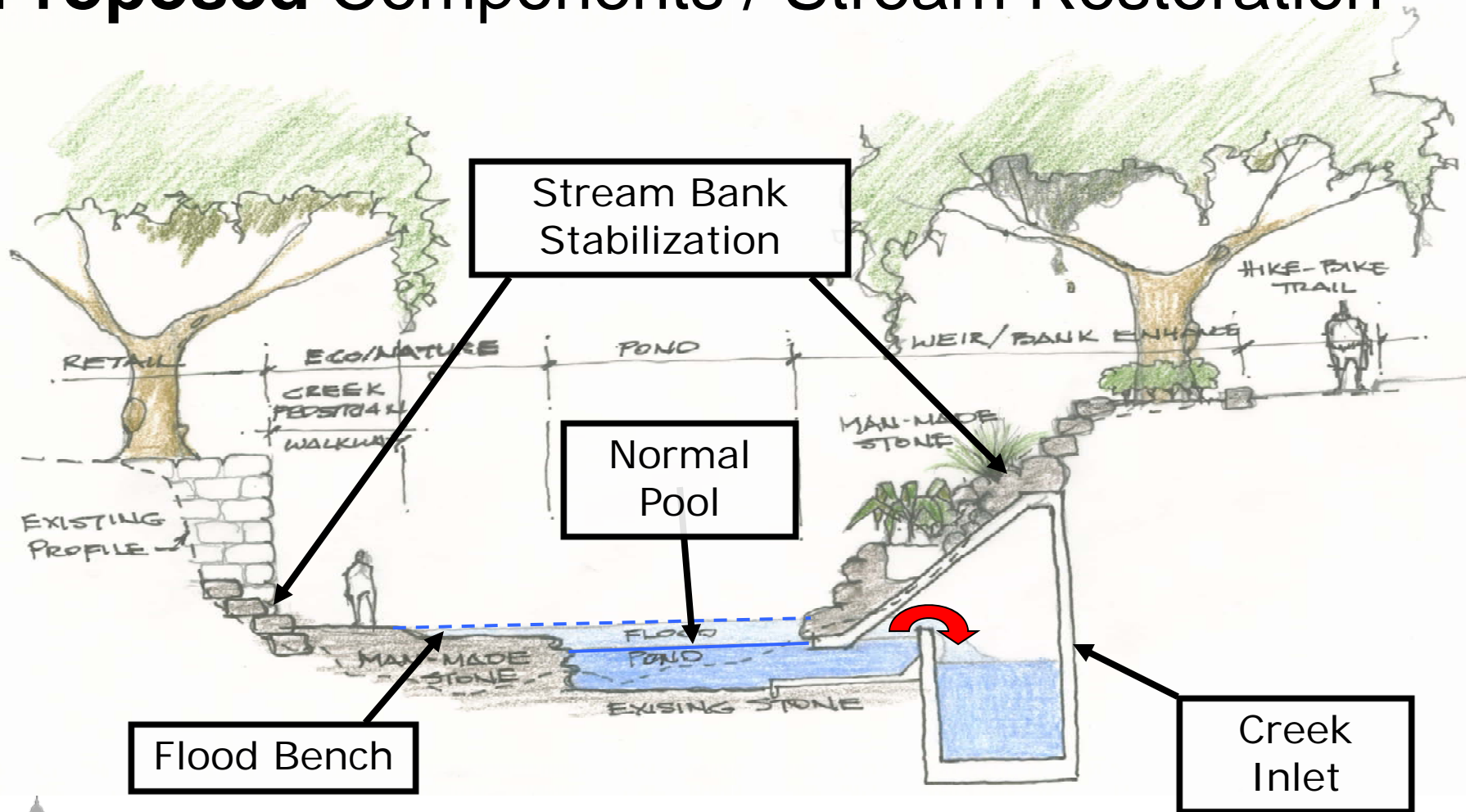


# Creek Side Tunnel Inlet Proposed Schematic



# Creek Side Tunnel Inlet

## Proposed Components / Stream Restoration





# Creek Side Tunnel Inlet Rendering



# Inlet (Waterloo Park)



# Inlet (Waterloo Park) Design Process

- Engineering requirements

- ☐ Hydraulic function
- ☐ Health and safety
- ☐ Minimize impacts / optimize benefits

**mission critical!**

- Maintaining park use and trees

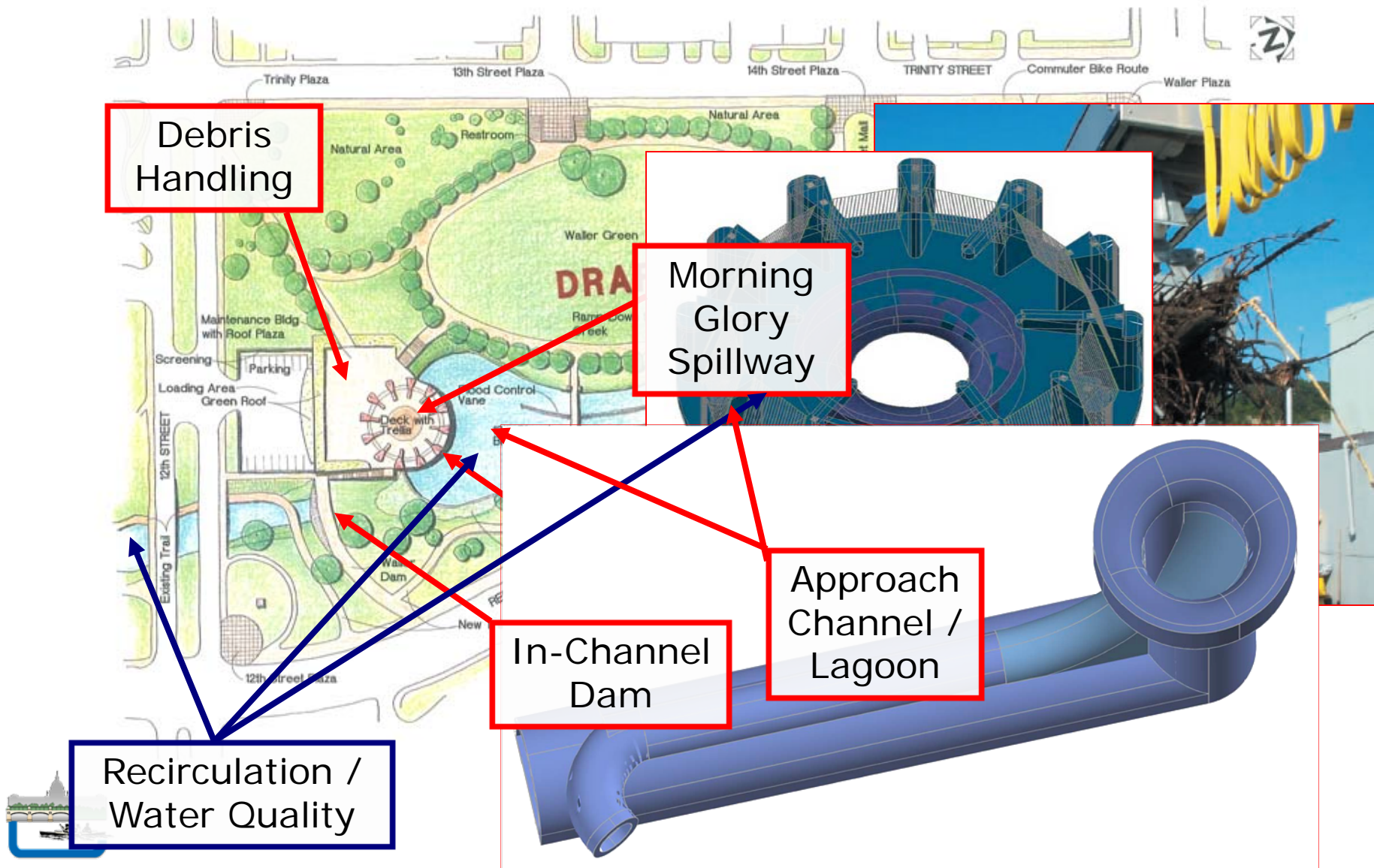
- Environmental considerations

- Public outreach

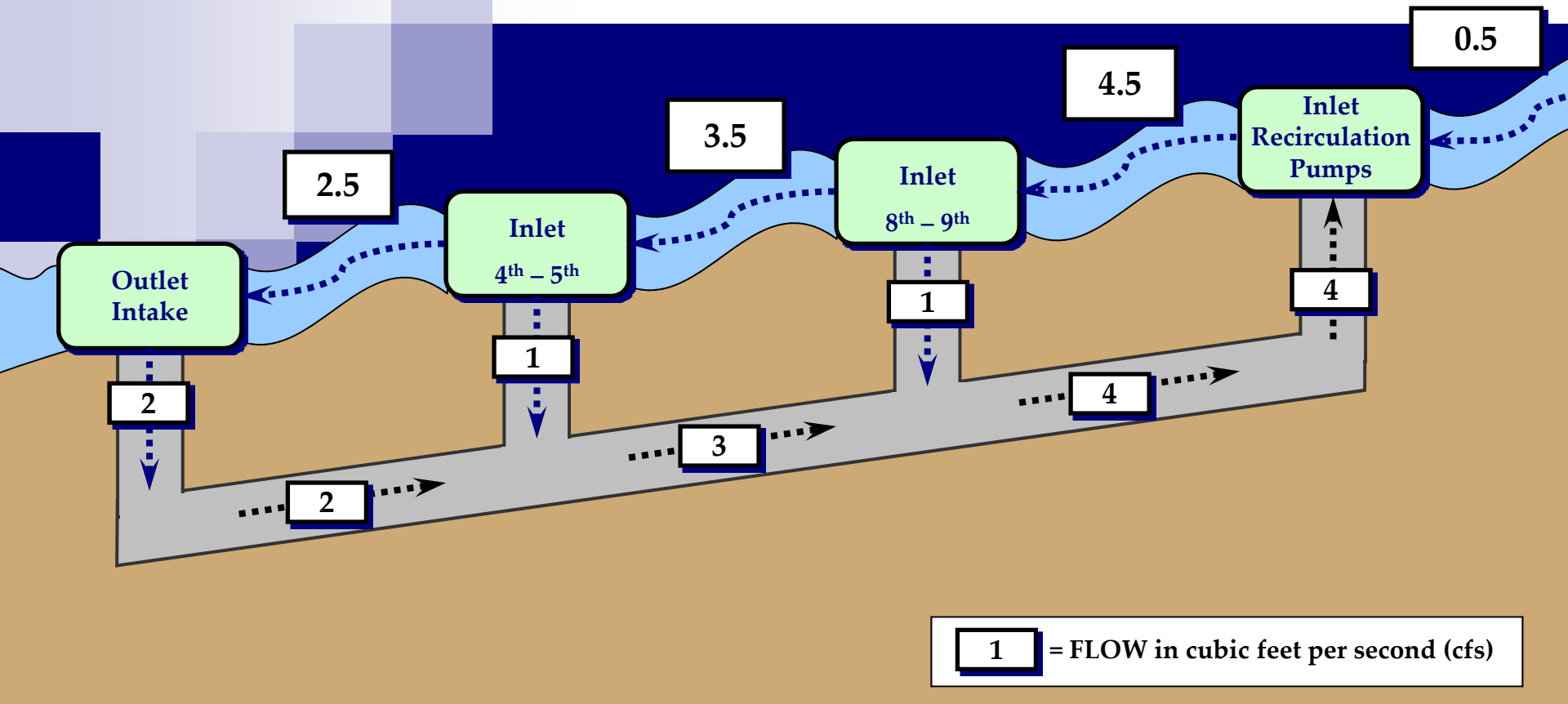




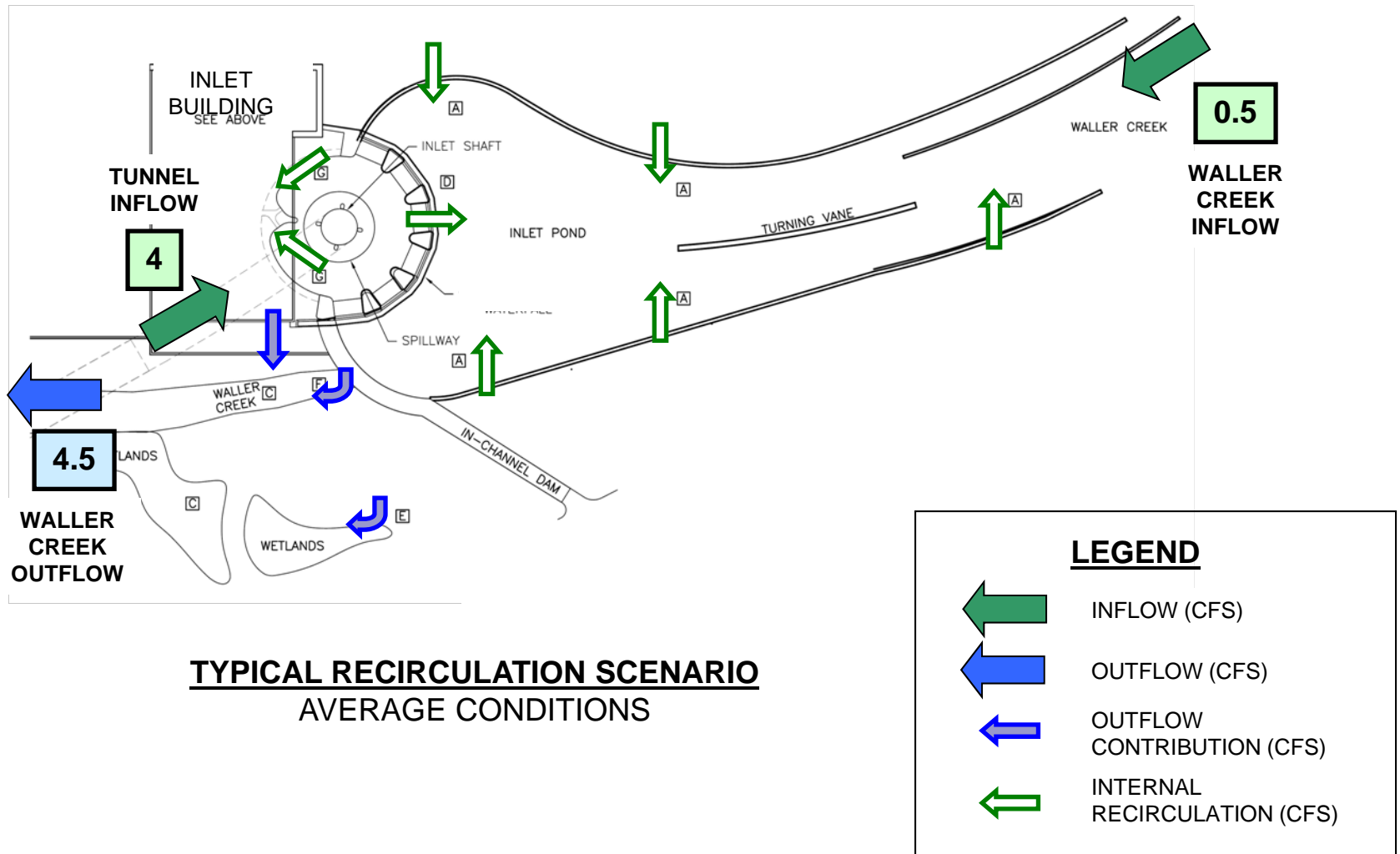
# Inlet at Waterloo Park (proposed)

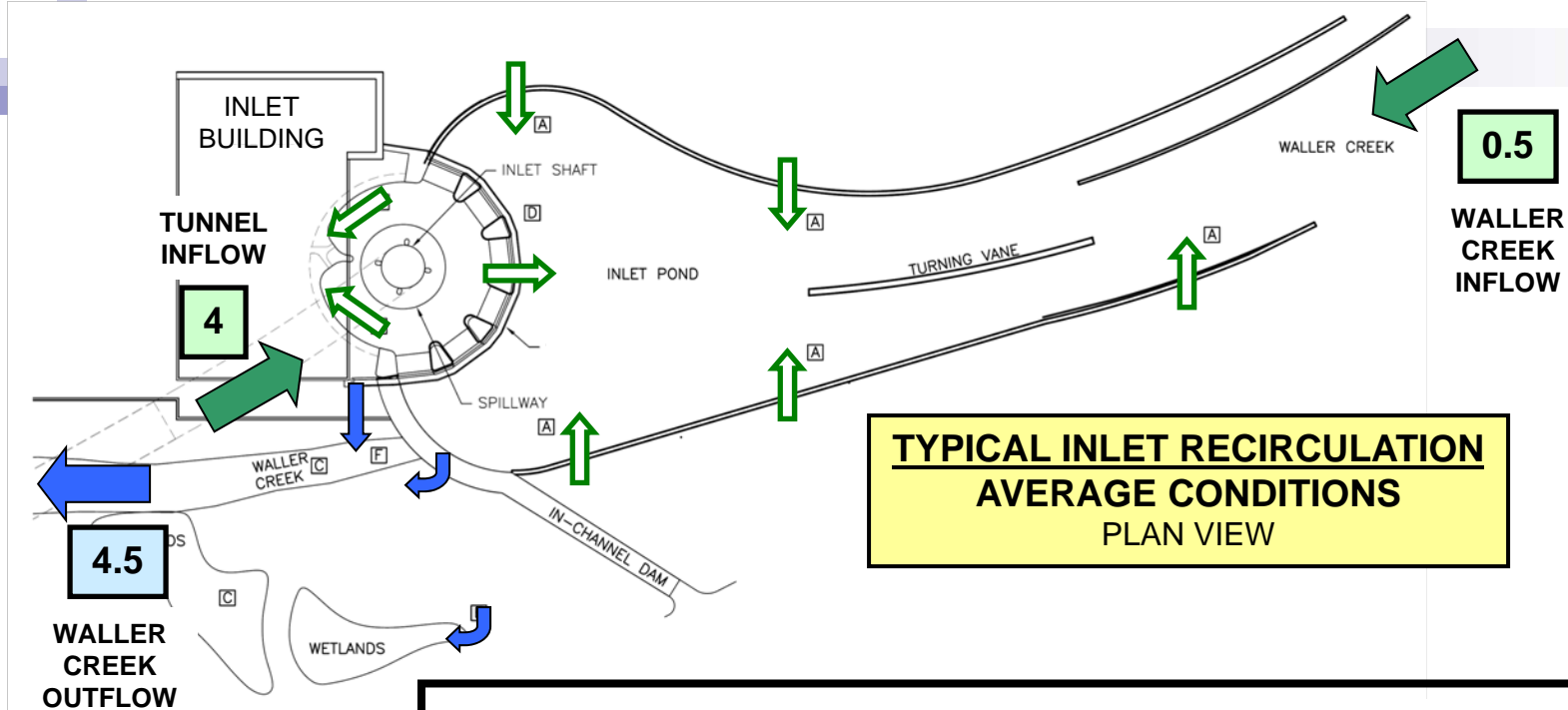


# Balance / variability

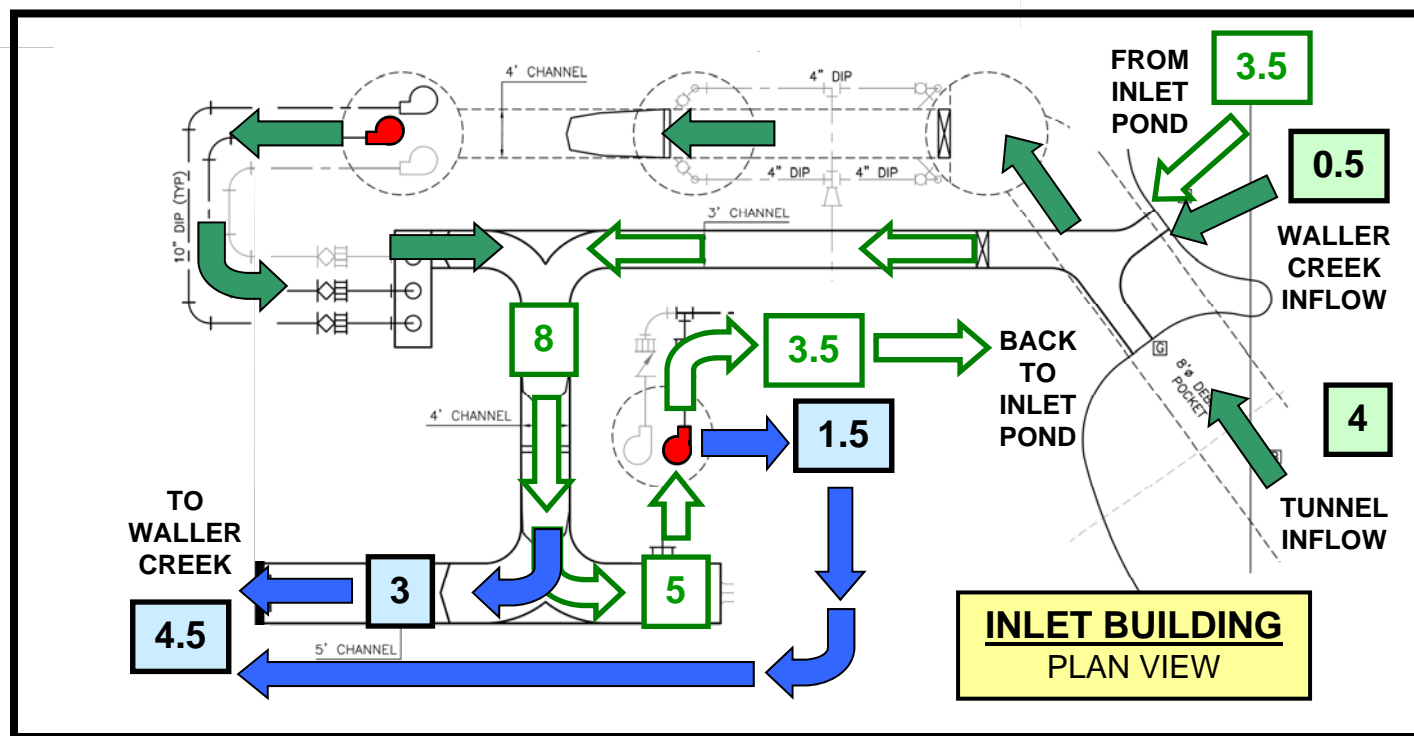
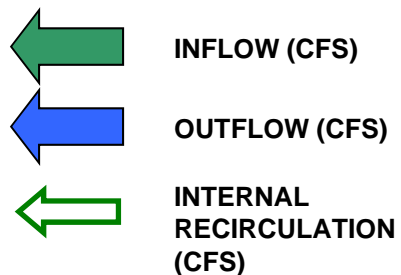


# Inlet Recirculation Design





## LEGEND





# View from 12<sup>th</sup> and Red River





# View looking south toward 12<sup>th</sup>



# Current Schedule

## Tunnel (with 4th St. Inlet)

Design & Bidding

Now thru Jan, 2011

Construction

Feb, 2011 thru Jul, 2014

## Inlet (Waterloo Park)

Design & Bidding

Now thru Aug, 2011

Construction

Sep, 2011 thru Sep, 2014

## 8<sup>th</sup> Street Inlet

Design & Bidding

Now thru Mar, 2013

Construction

Apr, 2013 thru Jul, 2014

## Outlet (at Lady Bird Lake)

Design & Bidding

Now thru Feb, 2012

Construction

Mar, 2012 thru Jan, 2014



# Questions

